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## UNIVERSITY AND EDUCATIONAL NEWS

MR. T. C. DU PONT has given \$500,000 to the Massachusetts Institute of Technology toward its proposed new site. Announcement is also made of two bequests of about this amount: a trust fund of between five hundred and six hundred thousand dollars, created by Francis B. Greene some five years ago, will be received by the institute for the assistance of students, and it will receive nearly \$500,000 from the bequest of Mrs. Emma Rogers, widow of William B. Rogers, the first president of the institute. These large gifts in addition to the \$100,000 for ten years appropriated by the state, will make it possible for the institute to purchase a new site and erect the necessary buildings.

By the will of Mrs. Lydia Augusta Barnard, of Milton, Mass., Radcliffe College received \$75,000 for a dormitory and \$40,000 for scholarships, and Harvard University receives \$60,000 for the study of jurisprudence and legislation.

THE Harvard College corporation has voted to approve the establishment of a school for advanced instruction in medicine in general accordance with a plan proposed by the Faculty of Medicine; the intention is that the school shall go into operation at the beginning of the academic year 1912-13, that it shall have a separate dean and administrative board, and that it shall ultimately absorb the Summer School of Medicine. Instruction in the school is to be provided if possible by the existing departments of the Medical School, but, if necessary, instructors will be appointed specifically for giving instruction in the new school. The courses of instruction will consist of all-day courses, intermittent courses and research courses.

THE preamble of the statute exempting students in natural science and mathematics from examination in Greek passed congregation at Oxford on May 16 by a vote of 156 to 79.

PLANS for the extension of the work of the department of physiology of Columbia University are being carried out. Three additions to the staff have been made: Frank H.

Pike, of Chicago University, to be assistant professor; Horatio B. Williams, of Cornell, to be an associate, and Donald Gordon to be an instructor. Dr. Williams is spending the summer in Europe visiting several laboratories and arranging for the purchase of apparatus for electrocardiographic and other work. Professor Burton-Opitz will have charge of the instruction of the medical students and Professor Pike of much of the work in general physiology. A course in clinical physiology, dealing with the application of physiological methods to problems of clinical medicine has been established. Changes in the laboratories will be made during the present summer. The income of the George G. Wheelock Fund is to be devoted to the extension of the library. The chief professorship of physiology, held by Frederic S. Lee, has been entitled the Dalton Professorship, in memory of John C. Dalton, who was in point of time the first experimental physiologist of America and gave distinguished services to the Columbia School of Medicine for thirty-five years.

DR. S. O. MAST, professor of botany at Goucher College, has resigned in order to accept an associate professorship in zoology in the Johns Hopkins University. He will take up the duties connected with his new position at the opening of the next school year.

AT the University of California J. G. Fitzgerald has been appointed associate professor of bacteriology; J. Frank Darnel, assistant professor of zoology, and A. U. Pope, assistant professor of philosophy. Instructors have been appointed as follows: C. J. Lewis, in philosophy; Frank Irwin and Thomas Buck, in mathematics; C. L. Baker, in mineralogy and geology; D. W. Morehouse, in astronomy.

## DISCUSSION AND CORRESPONDENCE

## THE TEST OF VITALISM

TO THE EDITOR OF SCIENCE: Such attempted definitions of vitalism as those furnished by your correspondents fail to give a clear conception of the idea usually conveyed by the word. Its real significance, I think, is better

expressed by a hypothetical test. Assume any healthy organic cell or organism to be instantaneously resolved into its constituent particles so that they are suddenly reduced to inorganic substances. Then assume that it were possible to instantaneously reassemble each of these particles in precisely the physical relations in which they before stood to each other with the same temperature conditions and let each particle be instantaneously impressed with motions the same in direction and amount which they possessed at the instant of dissolution. If then the reassembled body goes on as an organism as before, it will be proof that life is but the operation of what are known as the ordinary mechanical and chemical forces. If not, it will be proof that a certain *tertium quid* no matter what is lacking to convert the body into an organism. This *tertium quid* constitutes the element of vitalism as it is generally understood. It does not necessarily imply the imposition of some new and foreign principle or substance on the materials constituting the body. It may be nothing more than the bringing into activity of forces or affections previously latent in the materials themselves. The former seems to be the theory of the extreme vitalists who look on the soul as something distinct from the body, while the latter seems to correspond with the views of those vitalists who regard matter as in the language of Tyndal impressed with the potency of all life.

In a last analysis, however, no sharp line of distinction can be drawn between the vitalists of the latter type and the non-vitalists. For it seems clear that if this *tertium quid* be in any manner latent in the inorganic particles, it may be looked on as undisclosed chemical attributes of the matter itself. It becomes rather a question of definition, what are chemical or mechanical attributes? These terms in their popular significance are confined to forces subject to comparatively simple mathematical laws. I think few mathematicians would concede that such laws, however numerous, could furnish an equation which would satisfy the complicated movements involved in the life history of an organism.

The forces at work must be something more than those ordinarily understood as mechanical or chemical.

When to this is added the element of self-direction or self-selection, which in its higher forms assumes the aspect of self-consciousness, we have crossed a barrier which apparently can never be bridged in terms of mechanical or chemical forces and which must seemingly forever remain a mystery, whose solution we are no nearer than were the old Greek philosophers. The weight of such evidence as we have seems to favor a modified vitalist or it might be called mechanical vitalistic view. All vital activity is measurable in terms of energy expended. An infinite chain of physical causation determines every vital movement. No power of self-determination beyond such causation could exist without the power to create energy. The activity of the organic mechanism may be suspended indefinitely and again revived if no disarrangement of its constituent particles occur. On the other hand, no mathematical laws can be conceived of which could express the operation of the forces which direct the life history of the individual. Are we not brought back to the old theistic or deistic conception of an inscrutable power pervading all nature in whom we live and move and have our being?

WALTER S. NICHOLS

NEW YORK

A PLEA FOR THE USE OF REFERENCES, AND  
ACCURACY THEREIN

TO THE EDITOR OF SCIENCE: It has been the writer's duty, during the past two or three years, to compile, or to assist in the compiling of, a number of extensive bibliographies and lists of references to the literature of various chemical subjects, and during this work it has been often impressed upon him with what laxity and apparent disregard of consequences some authors handled—or failed to handle—their references to prior work. The same difficulty is all too often experienced when looking up some apparently simple subject.

For instance, an article was recently desired by a chemist employed in certain synthetic